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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/309,894	05/11/99	TAKEBE H	826.1546/JDH

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WM31/0810

EXAMINER	
DASTOURI, M	
ART UNIT	**PAPER NUMBER**
2623	9

DATE MAILED: 08/10/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/309,894	Takebe et al
Examiner	**Art Unit**
Mehrdad Dastouri	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *Three* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-13* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *8*
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicants' amendment filed, May 29, 2001, has been entered and made of record.

2. In the proposed Information Disclosure Statement, the reference "AM" (S. Tsuruoka et al, Japanese Language) is not submitted in a language understandable by the Examiner. The IDS has been placed in the application file, but the information referred to therein has not been considered.

3. Applicants' arguments with respect to Claims 1-13 have been fully considered but they are not persuasive.

Regarding Claim 1, Applicants argue in essence that prior art of record Lyon (U.S. 5,675,665) do not disclose the model data for a candidate character is not dynamically generated during a recognition process. The examiner disagrees and indicates that Lyon's invention incorporates word recognition unit 22 and character recognition unit 24 (a neural network or a hidden Markov model as indicated in Column 8, Lines 51-55) for **dynamically** generating (inherent characteristics of a neural network or a hidden Markov model) a feature amount of a word in the lexicon memory 30 and word memory 32 by utilizing the feature amount of stored characters during characters recognition process (Figures 11-13; Column 16, Lines 45-67, Column 17, Lines 1-6). Lyon invention reads the broad claim language and is in compliance with the procedure indicated in the instant application Page 9 at Lines 4-22.

4. Applicants' arguments with respect to Claims 9-13 have been fully considered but they are

moot in view of new ground of rejection. Claims 9 and 10 are broader versions of Claim 1, and analogous arguments presented for rejection of Claim 1 are applicable to Claims 9-13.

5. Applicants' argument that the teachings of prior arts of record (Lyon and Kimura) are not combinable is not persuasive. Lyon's and Kimura's inventions are both in the field of dynamic word recognition, and are reasonably pertinent to the teachings of feature extraction. The teachings of Lyon (feature extraction based on the size and displacement of the characters), and Kimura (feature extraction based on the directional codes or vectors) are both extremely well known methods in the art and are routinely implemented in pattern recognition. Based on the knowledge generally available to one of ordinary skill in the art, both methods are interchangeably relied upon as a basis for rejection of the claimed invention.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 5, 7, 8-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lyon (U.S. 5,675,665).

Regarding Claim 1, Lyon discloses a word recognizing apparatus, comprising:

a listing unit for storing a list of at least one word (Figure 1, lexicon memory 30, word memory 32; Column 4, Lines 19-22; Column 4, Lines 63-65);

a dictionary unit storing feature amounts of a plurality of characters (Figures 1 and 5-7, bounds measurement memory 36, bounds model memory 38; Column 10, Lines 39-67, Column 11, Lines 1-25. Based on the feature amounts extracted from the training word characters, feature amounts of plurality of model characters are extracted and stored in bounds model memory 38 as depicted in Figures 6 and 7.);

a generating unit dynamically generating a feature amount of a word stored in said listing unit using the feature amounts of characters stored in said dictionary unit during a recognition process (Column 14, Lines 32-57; Figures 11-13; Column 16, Lines 45-67, Column 17, Lines 1-6. After completion of feature amount extraction of the first training word and generation of bound models, the bounds evaluation unit 26 generates feature amounts of a next word structure 60 using feature amounts of characters stored in bounds model memory 38.);

A collating unit collating the generated feature amount of the word with a feature amount of a recognition target and outputting a recognition result (Figures 11-13; Column 18, Lines 57-67, Column 19, Lines 1-61. The feature amounts of a recognition target (e.g., "fog") will be precisely compared with the feature amount of training word characters stored in bounds model memory 38.).

Regarding Claim 5, Lyon further discloses the word recognizing apparatus according to Claim 1, wherein said generating unit generates the feature amount of the word by using feature amounts of a plurality of characters (Figures 2, 5A-B, 6 and 7. Feature amounts of the word "feed" is generated by using feature amounts of plurality of characters "f ", "e " and "d ").

Regarding Claim 7, Lyon further discloses the word recognizing apparatus according to Claim 1, wherein said collating unit performs a non-linear matching of the feature amount of the word and the feature amount of the recognition target, and calculates a degree of similarity between the feature amount of the word and feature amount of the recognition target (Figures 8-10; Column 16, Lines 45-67, Column 17, Lines 1-19. The bounds evaluation unit 26 performs the comparison operation by generating a set of error values E1-E8 that indicates the difference between the recognition target "fog" and character bound models.).

Regarding Claim 8, Lyon further discloses the word recognizing apparatus according to Claim 1, wherein said listing unit stores a list which has a high possibility of containing a word corresponding to the recognition target (Column 4, Lines 46-61).

With regards to Claims 9-13, arguments analogous to those presented for Claim 1 are applicable to Claims 9-13.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (U.S. 5,675,665).

Regarding Claim 2, Lyon discloses the word recognizing apparatus according to Claim 1, wherein said collating means includes a memory means which stores the feature amounts of the word (Figure 1, bounds measurement memory 36, bounds model memory 38). Lyon et al does not explicitly disclose releasing the memory means when a collation of the feature amount of the word is completed, and storing a feature amount of the next word. Utilizing a region of memory (buffer) for using as an intermediate repository in which data is temporarily held while a specific instruction is being executed is well known in the art (Official Notice). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon invention to incorporate releasing the memory location when a collation of the feature amount of the word is completed, and storing a feature amount of the next word in that location because it is a well known procedure routinely implemented in the art.

10. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (U.S. 5,675,665) in view of Kimura et al (Pattern Recognition Journal; 7; Improvement of Handwritten Japanese Character Recognition Using Weighted Direction Code Histogram).

Regarding Claim 3, Lyon further discloses the word recognizing apparatus according to Claim 1, further comprising:

an inputting unit for inputting an image as the recognition target (Figure 1, input device 14). The feature extraction disclosed by Lyon is different from the feature extraction recited in further limitations of Claim 3. Kimura et al disclose a handwritten character recognition system comprising extracting means for performing a one-dimensional gradating conversion in a direction

perpendicular to a connecting direction of characters for a direction code histogram of a contour line in each of the plurality of small areas in an inputted image and extracting a direction code histogram series obtained from a conversion result as the feature amount of the recognition target (Figure 2; Page 1330, Section 2). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon invention according to the teaching of Kimura et al to extract a direction code histogram series obtained from a conversion result as the feature amount of the recognition target because it will increase the accuracy and improve the confidence level of the character recognition system.

Regarding Claim 6, Lyon does not disclose further limitations of Claim 6. Kimura et al disclose a handwritten character recognition system comprising generating means generates a new direction code histogram series by arranging a plurality of directions code histograms series corresponding to the feature amounts of characters composing the word and designating a generated direction code histogram series as the feature amount of the word (Figure 2; Page 1330, Section 2). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon invention according to the teaching of Kimura et al to extract a direction code histogram series obtained from a conversion result as the feature amount of the recognition target because it will increase the accuracy and improve the confidence level of the character recognition system.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (U.S. 5,675,665) further in view of Kimura et al (Pattern recognition Journal; 7; Improvement of

Handwritten Japanese Character Recognition Using Weighted Direction Code Histogram) and Tsuruoka et al (IEEE Paper ISBN: 0-8186-4960-7; Segmentation and Recognition for Handwritten 2-Letter State Names).

Regarding Claim 4, neither Lyon nor Kimura et al disclose further limitations of Claim 4. Tsuruoka et al disclose a segmentation algorithm for recognition of handwritten characters comprising extracting means for dividing a length of the inputted image in the direction perpendicular to the connecting direction of characters by a predetermined integer and divides the image into the small areas with an obtained quotient as a size of the small areas (Page 816, Section 3.2. The splitting algorithm based on Criterion 2 will identify the optimum location for splitting (dividing) the image into small areas. This criterion performs an accurate dividing of characters including narrow width characters such as "I".). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon and Kimura et al combination according to the teaching of Tsuruoka et al to divide a length of the inputted image in the direction perpendicular to the connecting direction of characters by a predetermined integer and divide the image into the small areas with an obtained quotient as a size of the small areas because it will improve the accuracy of the character recognition system for narrow width characters.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438.

The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 4:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached at (703)308-6604.

Any response to this action should be mailed to:

Commissioner for Patents
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for ***formal*** communications; please mark **"EXPEDITED PROCEDURE"**)

or:

(703) 872-9314 (for ***informal*** or ***draft*** communications, please label "PROPOSED" or "DRAFT")

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703)305-4700.

MD

Mehrdad Dastouri
Patent Examiner
Group Art Unit 2623
August 6, 2001

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Attachment for PTO-948 (Rev. 03/01, or earlier)
6/18/01

The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability Extensions of time may NOT be obtained under the provisions of 37 CFR 1 136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes

Timing of Corrections

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a)

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.